	STUDENT ID NO							

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2019/2020

EET1156 – BASIC ELECTRICAL TECHNOLOGY (ME)

11 MARCH 2020 2.30 PM – 4.30 PM (2 Hours)

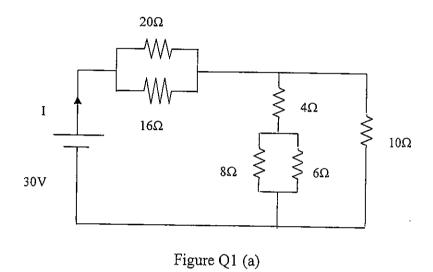
INSTRUCTIONS TO STUDENTS

- 1. This Question paper consists of 6 pages including cover page with 4 Questions only.
- 2. Attempt ALL the questions. The distribution of the marks for each question is given.
- 3. Please write all your answers in the Answer Booklet provided.

Question 1

- (a) Consider a 230V, 100W incandescent lamp. Determine:
 - (i) the lamp resistance, [2 marks]
 - (ii) the lamp current, and [2 marks]
 - (iii) the energy consumed by the lamp in 400 minute [2 marks]
- (b) Find the current supplied by the voltage source.

[8 marks]



(c) Find the Thevenin and Norton equivalents of the circuit as shown in Figure Q1(b) at terminal ab. [16 marks]

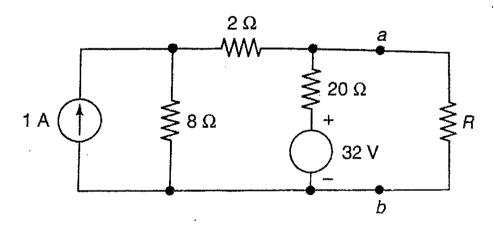


Figure Q1 (b)

Question 2

- (a) A charge of 1.5μ C is carried on two parallel plates each measuring $10\text{cm} \times 5\text{cm}$. Calculate the electric flux density. If the plates are 1cm apart and the voltage between them is 500V, determine the electric field strength and energy stored. [5 marks]
- (b) In the circuit given below, $C_1=60\mu F$, $C_2=20~\mu F$, $C_3=9~\mu F$ and $C_4=12~\mu F$. If the potential difference between points a an b, $V_{ab}=120V$, find the charge of the second capacitor. [11 marks]

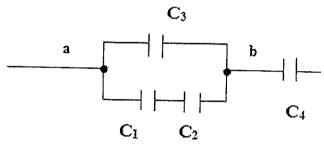


Figure Q2 (a)

- (c) A ring of magnetic material has relative permeability of 6000. The inner diameter of the ring is 10cm and the outer diameter 16cm. An air gap of 1mm is cut across the ring. The ring is wound with 500 turns carrying a current of 2A. Find the following:
 - (i) total reluctance, R

[5 marks]

(ii) flux density in the air gap, Bg

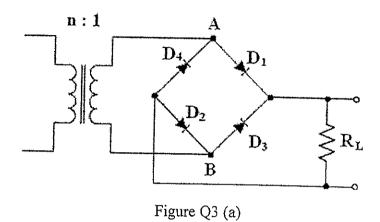
[2 marks]

(iii) intensity of the core, H_c

[2 marks]

Question 3

(a) What are the name and the function of the circuit shown in Figure Q3 (a)? Sketch the input and output waveform for the circuit for positive and negative cycle. [7 marks]



(b) Figure Q3 (b) shows a transistor circuit bias. If β_{DC} = 120, determine

(i)	$I_{B,}$	[2 marks]
(ii)	I_{C} ,	[1 mark]
(iii)	, I _E ,	[1 mark]
(iv)	V_{BE} ,	[2 marks]
(v)	V_{CE} , and	[2 marks]
(vi)	V_{CB}	[2 marks]

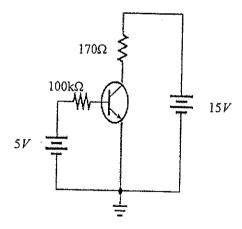


Figure Q3 (b)

[2 marks]

Refer to the amplifier in Figure Q3(c). Determine the following: (ii)

(i) V_{R1} and V_{R2} [2 marks] (ii) Current through R_f [4 marks] $(iii) V_{out} \\$

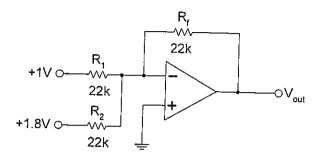


Figure Q3 (c)

Question 4

(a) Simplify the functions below by using Boolean Algebra (A+B)(A+C) (i) [3 marks] $\overline{A}(A+B)+(B+AA)(A+\overline{B})$ (ii)

[3 marks]

(b) Write the logic function for the logic circuit in Figure Q4 (a) and compute the truth table. What is the final simplified output function, Y?

[7 marks]

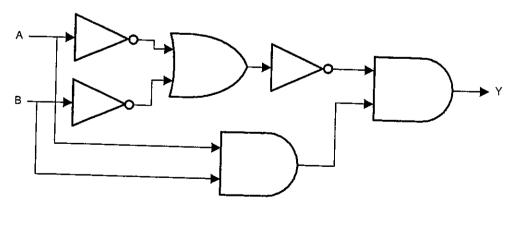


Figure Q4 (a)

(c) (i) Determine the simplified function (SOP) from the Karnaugh map shown in Table Q4. [4 marks]

Table Q4

AB C	00	01	11	10
0	1	1	0	0
1	1	1	0	1

(ii) Draw the simplified logic circuit with the SOP obtained above. [3 marks]

End of paper.